



GERMINATION STATION!

When a plant begins to grow from a seed, we call this germination.
Let's explore how light affects seed germination.

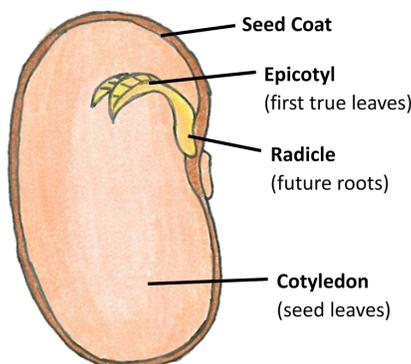
YOU'LL NEED:

- Seeds (Don't have a packet of seeds? Try using dried beans from your pantry!)
- Paper towels
- Water
- Three small plates
- A colander or piece of mesh
- A large bowl

HELPFUL TERMS:

- Germination: The process by which a plant grows from a seed.
- Independent Variable: The condition we are changing in each treatment.
- Dependent Variable: The condition that changes in response to the independent variable. Its value depends on how the independent variable is manipulated. The goal of any experiment is to study the impact of the independent variable on the dependent variable.
- Control Variables: The conditions that remain the same among each treatment.
- Hypothesis: A prediction about the outcome of your experiment. Good hypotheses are "If... then... because" statements. For example: "If I water some plants more and some plants less, then the plants that receive more water will grow taller because plants need water to grow."

PARTS OF A SEED:





GERMINATION STATION! PROCEDURE

INSTRUCTIONS

1. Place a damp paper towel on each plate.
2. Place the same number of seeds on each plate.
3. Cover the seeds with a damp paper towel. Throughout the experiment, make sure the towels remain moist, but not too wet.
4. Label one plate Control, another Treatment 1, and another Treatment 2.
5. Place each plate in a sunny location, such as a windowsill.
6. Cover Treatment 1 with the colander or piece of mesh. This will allow only some light to reach the seeds.
7. Cover Treatment 2 with the large bowl. This will allow no light to reach the seeds.
8. On the Experiment Guide (next page), make a hypothesis, or a prediction about the experiment. Which plate do you think will have the most germinated seeds after 10 days?
9. Check on your seeds every day and record how many seeds have germinated. You can tell if a seed has germinated if tiny roots and leaves begin to emerge from the seed.
10. After 10 days, examine your data and form a conclusion. Was your hypothesis supported? Why or why not?

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GERMINATION STATION! RECORD YOUR FINDINGS

WHAT IS YOUR HYPOTHESIS?

What do you predict will happen in this experiment?

WHAT IS YOUR INDEPENDENT VARIABLE?

This is the condition that is different among each treatment.

WHAT IS YOUR DEPENDENT VARIABLE?

This is the condition that changes in response to the independent variable.

WHAT ARE THREE THINGS THAT SHOULD BE KEPT THE SAME (OR CONTROLLED) IN EACH TREATMENT?

- 1.
- 2.
- 3.

DATA:

Use the table below to record how many seeds germinate each day for each of your plates:

	Number of seeds germinated									
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Control										
Treatment 1										
Treatment 2										

WHAT IS YOUR CONCLUSION?

After 10 days, do your results support your hypothesis? Why or why not?

MORE IDEAS:

- Can you explain the results you observed? Research how light affects seed germination.
- Create a graph to display your data. Would a bar or line graph be best?
- Calculate what percentage of seeds from each treatment germinated after ten days.
- Try this experiment again with a different independent variable. How could you test the effect of water, pH, temperature, or any other variable on seed germination?
- Draw a detailed sketch of one of your germinating seeds. Then, dissect it! Can you identify the parts of the sprouting plant?
- When they are large enough, transplant some of your sprouted seeds into soil in a container or in the ground outside and continue to watch them grow.